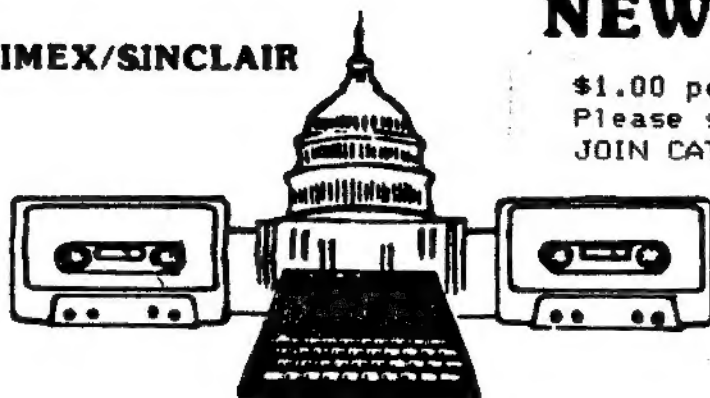


# CATS

CAPITOL AREA TIMEX/SINCLAIR  
USERS GROUP



# NEWSLETTER

\$1.00 per copy  
Please support your computer-  
JOIN CATS!

Vol. 4, No. 9  
December 1986

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### PRESIDENTIAL RAMBLINGS

As the 1986 year comes to a close, you may notice a few friendly reminders pertaining to renewing your membership. I should point out to you that your membership is more than just a newsletter, although most of your dues go into its publication cost.

Everyone is welcome to come to the monthly meeting and we encourage you to do so. We have fixed, expanded and upgraded several machines this year. We have purchased (after considerable trouble) 100 SCLD chips for the TS2068. These are the only ones available and they add extra lives to your 2068 should you mis-step (or better, shuffle your feet!!)

CATS, as a group has considerable buying power. The QL purchase (Doug

Dewey, et al) will bring about 20 CATS members QLs @ \$109 each post paid!! Dozens (hundreds?) of cartridge boards for the 2068, eeproms, serial boards, modems, disks, and a lot more have been made available through the CATS user group at bargain basement prices! If you haven't been to a meeting, just think of the chaos and zaniness you miss out on.

We have had many guest speakers and tried to keep everyone abreast of the latest news. We will continue to do so in the future. At this meeting, we will have an Atari 520ST to look at and compare to the QL. We will also have the Mac at an upcoming meeting.

We hope to see YOU at the meeting. If you can't make it, have a safe and merry holiday, and we'll see you next year.

## DON'T FORGET RENEW!!

## Erratta

Frank Bouldin, of the Fort Worth TSUG, reports that there is one error in the pinout of the SCLD as reported in a past issue. Pins 30 and 28 are reversed. They control the MA5 and the MA6 signals. It's still a massive effort of research that Nazir Pashtoon of the LIST group put out.

Finally, RENEW!

MF

## From the Editor Newsletter News

**Renew!** We can only exist as an active club if **YOU** help keep this newsletter going. 90% of our dues goes into production and mailing of the newsletter - help keep CATS one of the most vital Timex-Sinclair Users groups in the country!

If you joined later in the year, your membership won't technically run out until 12 months from when it started - but by renewing now, you can help us more realistically plan for the coming year. **GIVE CATS A HOLIDAY GIFT OF A YEAR'S MEMBERSHIP!**

The second thing we need is writeups of what you've been doing - reviews, programs, etc. My standing editorial policy is to give **EVERYTHING** submitted by members preference over material from other sources - it won't hurt to try! **WE NEED ARTICLES!** 'Nuff said.

## QL Kit News

Hank spoke to Doug Dewey about the QL buy. As of 11-28-86, A+ has agreed to a price of \$109.00, including \$10.00 freight. Over 60 people have signed up for the deal. A list of all the people that signed up at our meetings has been forwarded to Doug, including addresses.

It will also be possible to order various QL type accessories - extra documentation, etc. - at the time the QL is ordered. Monitor and printer info will come later.

Doug will be sending out cards to the 60 folks with "complete info on how to get your own QL by Christmas!" (says Hank).

There may still be time - if you want to get in on the buy, contact Doug Dewey at 206 James St., Carrboro NC 27510 or (919) 929-3079.

In addition, Tom Bent is bulk ordering surplus Psion mikrowafers from Psion - reportedly with foreign language versions of checkbook programs, etc. - cheap! More to come.

## AERCO Disk I/F News

The chip sets for the AERCO disk I/F I/F Kits have been ordered, but still haven't arrived. Tom's going to light a fire under them. **AWLRIGHT ALLREADYYY!** Hmmm.

## ☆ SCLD ☆

Revive Your DEAD TS2068

OR

Make Your TS2068  
**INDESTRUCTIBLE!!**

**100 Chips - First come basis**

\$20 ea.      \$18 ea. for 3 or more

W/instructions  
optional 68PCC socket available

cks to:      CATS Users Group  
P.O. Box 725  
Bladensburg, MD 20710

**Chips Are HERE!!**

*100% chips test AOK!*

## Officers & Functionaries

|                |                |
|----------------|----------------|
| President      | Tom Bent       |
| Vice-President | Hank Dickson   |
| Vice-President | Harry Harrison |
| Treasurer      | Ruth Fegley    |
| N/L Editor     | Mark Fisher    |
| N/L Production | Sarah Fisher   |
|                | Bob Curnutt    |
| Corresp Secy.  | Mike Cohen     |

## CompuServe Kits, SCLD's Highlight November Meeting

The November CATS meeting featured a large and talkative gathering of small computer (a.k.a. Sinclair) enthusiasts.

In the warm-up meeting beginning at noon, John Riley put on a comprehensive demonstration on how to take programs stored on tape cassettes and transfer them to a Sinclair-compatible floppy disk drive. For a working sample he used the CATS membership software developed by former CATS president Ned Beeler. John put it on a floppy disk using the Aerco interface and operating system language. Our treasurer, Ruth Fegley, will now be able to load and use the program with her own 2068 and Aerco disk drive when updating the membership data base.

Treasurer Ruth Fegley had arrived back from her sojourn to St. Croix in time to present a concise report on the group's financial status. Her message: We are solvent now, but preservation of that status depends mainly on the volume of next January's membership renewals.

CATS members Mike Warmick and Willie Usher were again present with their TV equipment, and proceeded to capture the whole proceedings in the VHS video format. Everyone in attendance got into the act during the individual introductions preceding the meeting.

A lengthy discussion was held on the impact of escalating printing costs on the newsletter and on the dues structure for 1987. Many options and alternatives were explored.

It was decided to have the executive committee meet in the interim and bring back proposals for adoption at the December meeting.

Tom Bent provided an introduction to using CompuServe with the Sinclair family of computers. He went

step-by-step through the log-on process, and described some of the goodies to be found once inside the CompuServe system.

Tom had 25 CompuServe introductory kits to distribute, courtesy of David M. Rothman, who is volunteer CompuServe administrator for the Sinclair special interest group. The kits are a form of enticement which demonstrate how easily CompuServe can be accessed and enjoyed.

The 25 kits went quickly, showing the interest of the attendees was active, not passive. Each kit came with about \$15 worth of CompuServe browsing time (or approximately one hour). Tom said more kits can be obtained from David Rothman, if desired.

Mark Fisher then had the pleasure of displaying to the group the recently received cache of SCLD chips from far-away Portugal.

Not only did he show the little devils off, he also conducted a workshop on how to install one in a 2068!! He used the magic socket available from Bill Allen at Electronics Plus (North College Park). This is the "AMP" socket selling for \$13.50 (not the "AUGATE" socket selling for \$18--that's the wrong one).

Mark carefully went through the sequence of steps involved. He even displayed a 2068 which has successfully undergone the SCLD implant--something which puts him one up on the rest of the world.

More such workshops are planned for the future. There are plans also for producing special video lessons on how to handle the tricky soldering required for this unique exercise.

### Contributors

Ken Abramson  
Tom Bent  
Hank Dickson  
Mark Fisher  
Mark Hochhauser  
Wilf Righter  
John Riley  
Jonathan Vanderwall

### Deadlines

| Newsletter  | Meeting     |
|-------------|-------------|
|             | December 13 |
| December 22 | January 10  |
| January 26  | February 14 |
| February 23 | March 14    |

## Executive Committee Announcement

In November the Executive Committee was instructed to examine the Group's dues structure.

The CATS monthly newsletter is the group's only major expense.

Because of the steadily increasing costs related to printing and mailing the newsletter, the Executive Committee decided to raise the annual dues to \$18.

This will assure the continuation of the newsletter with its present size and quality.

Therefore, the CATS dues for a family membership starting in any 12-month period beginning in January, 1987 will be \$18. (1987!)

This recommendation will be subject to the review and approval of the membership at the December meeting.

```
*****
*               FOR SALE               *
*                                     *
*      2040 Printer with               *
*      lots of paper                   $30 *
*                                     *
*      Star Micronics                  *
*      STX-80 Thermal                  $55 *
*      Printer with 5                   *
*      rolls of paper                   *
*                                     *
*      QL Chess Program                 $18 *
*                                     *
*      QL Technical Guide               $20 *
*                                     *
*      Asst. 2068 Software              *
*                                     *
*      Call John Riley (301)674-8560. *
*      Items can be picked up at my   *
*      house or brought to December  *
*      CATS meeting.                   *
*****
```

### Announcing the First-Ever

#### Clive Sinclair Memorial

#### Holiday Gift Exchange!

You are invited to be part of this exciting holiday happening .....  
It is going to occur at the CATS Meeting on Saturday, December 13th, 1986.

Time: 2 p.m.  
Place: New Carrollton Public Library  
Main Meeting Room (a.k.a. Santa's Warehouse)

Here's what you do:

1. Pluck something from your reservoir of Sinclair, ham radio, or general memorabilia.  
(Preferably something not overly expensive, but something you still really enjoy yourself.)
2. Cover it simply but adequately with holiday wrappings.
3. Bring it to the CATS meeting December 13th and put it under Sir Clive's Christmas Tree.
4. Pick up a random number to be used later for queueing up the sequence to be followed by the openers. Uncle Clive will generate a set of numbers guaranteed to be randy.
5. When your number comes up, you will be eligible to choose any gift remaining under the tree.
6. After opening your selection, you will be able to "bank switch" with any other gift that preceded you.

Make plans now to come and be part of this gala holiday CATS event!!

CATS 4 December

# 2068 Software Library Update

by John Riley

## 2068 Software Library Update

Two very nice programs have come in for our 2068 Library this month. One is Textype, a word processing program whose output you are seeing as you read this column. Or rather, you are seeing ONE of its outputs, because Textype has four user-selectable type fonts built in! Each font will print out to a 2040 printer (or with a little creative wangling you can use a screen dump routine to a full-size printer like I am doing here.

The four fonts are regular, bold (the one you see now), italic, and modern (see previous paragraph for example). Textype also will justify and center the text, but there is no automatic word-wrap.

There are a couple of other bugs in the program, but none fatal and all would be correctable by some enterprising software hacker. I commend it to you for further investigation, and it will be included in the next volume of the library, or those hotheads who want it NOW can bring a blank tape to the December meeting and I will dupe a copy for you on the spot.

Whew! Back to MSCRIPT, which might not be as pretty, but I am much more used to using. The next program would be of special interest to those of you who are programmers and/or machine code maniacs. It is a utility called MTOS, a copywrited program by CATS member T.G. Morley, who now resides in the wilds of New Mexico. He is kindly waiving his royalty rights and making it available free of charge to CATS MEMBERS ONLY. MTOS will not be available to groups or individuals who want to swap software with us.

MTOS merges with a program you wish to modify, then makes available a number of utilities to make that conversion easier, such as a binary UDG converter, a hex/decimal changer, and several other goodies that look impressive but that I am too ignorant to know how to use. I have written Mr. Morley to ask him to write a column detailing the use of his utility. If he can oblige us it will appear in a future newsletter. In the meantime, folks who are curious might be able to see it in operation at the December meeting.

As always, I am delighted to hear from anyone from CATS or a

sister user group who has some good software to share with us. Why not drop a line//give me a call// send some E-Mail to John Riley, 1316 Farrara Dr., Odenton, Maryland, 21113. (301)674-8560. CIS #73317,3526.

## VU-CALC 80 Col Erratta

Or, Better Late Than Never

Mark Fisher

Well..... A long time ago, I ran an article on adding 80 column print capability to VU-CALC. Um.... Well.... Uhhh.... Well, there was an error in the listing, that kept it from printing any columns above #3. I had tested it, but only up to column 3. Oh well. A member told me of this, but I put it off to his bad typing. Well, I was wrong. The correct listing follows:

First, change the COPY in line 2000 to CLS: GOSUB 9600: CLS. Then add:

```
9600>POKE 23658,8:CLS :PRINT "'80 Col. Printer Driver"
9610 INPUT "Start col: ";sc
9620 PRINT "Starting Col.= ";sc
9630 INPUT "End col: ";ec
9640 PRINT "Ending Col.  = ";ec
9650 LET s=0: INPUT "Start row: ";s$: LET s=CODE s$(LEN s$)-64+(2
6*(LEN s$=2))
9660 PRINT "Starting Row = ";s$
9670 LET e=0: INPUT "End row: ";e$: LET e=CODE e$(LEN e$)-64+(26
*(LEN e$=2))
9680 PRINT "Ending Row  = ";e$: POKE 23658,0
9690 REM ** Set up printer **
9700 REM Col headings
9710 LPRINT "      ": DIM t$(8): FOR x=sc TO ec
9720 LET t$="      ":STR$ x: LPRINT t$;
9730 NEXT x: DIM t$(3)
9740 LPRINT
9750 LET base=34573+(s-1)*350
9760 FOR r=base TO base+(e-s)*350 STEP 350
9765 LET t$=s$: LPRINT t$; LET S$(LEN S$)=CHR$(CODE S$(LEN S$
)+1): IF CODE S$=91 THEN LET S$="AA"
9770 FOR x=(sc-1)*7+r TO ec*7+r
9780 LPRINT CHR$ PEEK x:
9790 IF (x-34572)/7=INT ((x-34572)/7) THEN LPRINT " ";
9800 NEXT x
9810 LPRINT
9820 NEXT r
9830 RETURN
```

Specifically, line 9770 included the wrong limit. Sorry.

MF

### The Doubler

Some time ago I suggested a possible means of tape duplication to a colleague, W. V. Hattery, and we considered it at some length. As is by now well known, dubbing from one deck to another incurs cumulative phase distortion which ultimately prevents the generation of further copies, and may in some instances prevent the generation of any copies at all. My idea was simply to step aside from the whole question of the various forms copy protection takes, fascinating though they are, and simply use the computer itself to detect and "square up" the input waveform at the EAR jack, then output this to the MIC jack. Through pressure of other projects we did not proceed with this scheme, but a British firm, Evesham Micros, did, and Walter Hattery recently purchased one as an experiment.

Instead of using the EAR jack as input, however, they supply what amounts to a serial port which looks a good bit like a large 16 k RAM pack. This plugs onto the back of the Spectrum. The program you wish to duplicate is played into a jack on this box, then, via a short MC program, sent to the MIC jack for output to a second tape recorder. Now I imagine everyone reading this is screaming by now, "DON'T PLUG IT ONTO A TS-2068!" Relax. We pulled the thing apart and traced the circuit, and it is safe. The only signals used in the doubler are: +5 volts, ground, A7, A8, A9, D3, IORQ-not, and RD-not. These are the same on the 2068 as the Spectrum, so put your ROM-SWITCHED 2068 to Spectrum, and go to it.

Actually, the Doubler can be made to stand-alone, if one wanted to take the time. The Doubler contains a comparator circuit to detect input levels and translate them to TTL levels, together with enough logic to make it a port. One could disconnect all the logic and simply bandpass filter and attenuate the comparator output to make it look like the MIC output of the 2068. Why didn't we? Just lazy, I suppose.

The Doubler Mark II is available for £ 14.95 plus shipping from:

Evesham Micros  
Bridge Street, Evesham  
Worcs. WR11 4RY  
U.K.

Or call them at 0386 41989 and use VISA.

Jonathan Vanderwall



(C)1986 by W. RIGTER.

After all you need a ROBOT or I/O board to make it work, right?

Then I saw Ken A. do a demo of Text To Speech in software and heard him describe the potential of such systems for students in the ESL program.

Well, I got hooked and decided to contribute something of my own.

After some discussion with Ken and Harry S., it became apparent that at least 3 improvements might be needed to the existing ZSPEAK system:

1. Make it cheaper, simpler, compact.
2. Get rid of the screen flicker.
3. Improve the machine language driver.

\*\*\*ZVOICE\*\*\* is the solution to all 3

## THE HARDWARE

For the first improvement I used the rule "Simplicity without compromise" to achieve the desired objective.

FIG.1 shows the resulting circuit:

a chip count that is hard to beat, a 50 percent reduction in size, and performance equal to the ZSPEAK SYSTEM.

The I/O ADDRESS remains the same as the ZSPEAK SYSTEM, and hence existing ZSPEAK SOFTWARE can be run unmodified on the new ZVOICE unit. Furthermore new software for the ZVOICE unit can used with the older unit.

The ZVOICE design takes advantage of the "on chip" I/O port of the SP0256 IC and uses the existing CPU clock signal instead of a crystal oscillator. The handshake SBY (active low when busy) signal is gated to the DATA bus with transistor Q1 when I/O address 37h is read. If not "busy" a 6 bit DATA byte can be written to I/O address. 17h selecting the PHONEME to be voiced.

The ZVOICE unit can be used with the both TS1000/1500 and 2068 computers.

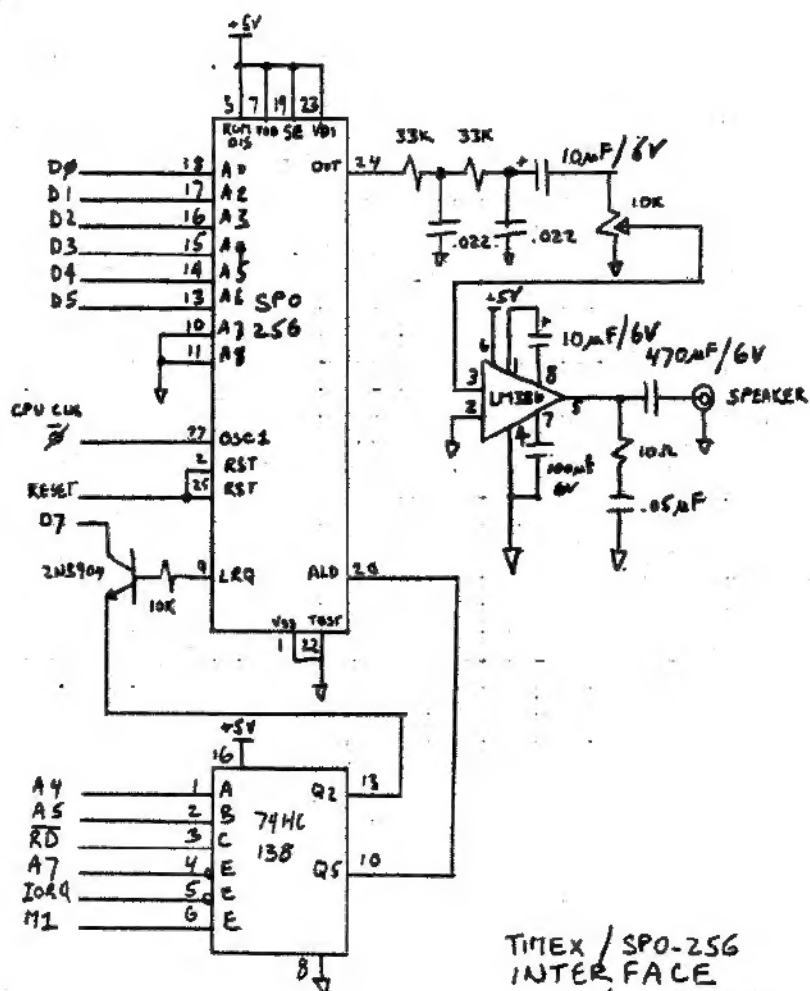
## THE SOFTWARE

Item 2 on our wish list calls for "flicker free" operation and that means SLOW MODE for the TS1000.

But existing BASIC software has a hard time keeping up with a SP0256 chip hungry for PHONEMES.

Like a PRINTER BUFFER, a PHONEME BUFFER could be designed in hardware but this would add to the complexity and cost.

What about a SOFTWARE BUFFER with some MACHINE CODE to speed things up.



TIMEX / SPO-256  
INTERFACE  
(C) 1986 W. RIGTER

LISTING 1 shows a HL routine that does the job.

When combined with the basic program in LISTING 2, the user can assemble a PHONETIC WORD, PHRASE, PARAGRAPH or even a whole book of PHONEMES in a STRING VARIABLE BUFFER. Then using RAND1 and RAND USR 16516, this BUFFER is loaded into the SP0256, one PHONEME at a time, while the printed version of the spoken phrase can be viewed without screen flicker.

The ML routine RETURNS to BASIC when it finds the last phoneme in the BUFFER which was set to a value greater than CHR\$ 127.

You can try this software, together with LISTING 3, on your existing ZSPEAK units and discover INTEGRATED SIGHT AND SOUND.

### LISTING 1

16514-118, 118, 42, 16, 64, 17, 5, 0, 25  
16523-237, 91, 50, 64, 25, 219, 39, 230  
16531-128, 40, 250, 126, 211, 23, 35  
16537-230, 128, 0, 242, 201.

## SOFTWARE DETAILS

For those of you wishing to delve deeper into this concept, HANG ON TO YOUR HEADS.

The ML routine in LISTING 1 is deceptively simple but conceptually powerful.

As a CORE routine, called from a BASIC or ML program, it expects to find the PHONEME BUFFER in the FIRST VARIABLE of the variable area and uses an OFFSET passed in SYSTEM VARIABLE "SEED" to point to the start of the phoneme phrase to be voiced.

This means that a number of such phrases can be arranged in the buffer, with the start of the selected phrase pointed to by "SEED".

The ML routine ADDS the offset to the start of the buffer. The SBY line is tested using IYN A, (17). The program loops until bit 7=1. Then phonemes are loaded using LD A, (HL) and OUT (17), A. The program loops until phoneme to be loaded has bit 7 set. This is tested using AND A, 80, after which the routine returns to the CALLING PROGRAM.

If the calling program is MACHINE LANGUAGE, a slight variation may be used where the SBY polling loop can JR Z, 08 to return to the calling program with the Z flag set, allowing the program to execute other stuff BETWEEN PHONEMES.

This might provide a continuous speech output while writing data to the VIDEO SCREEN (ie a face with lips moving while speaking).

Wow that left me kind of breathless.

A slower but effective method uses a BASIC calling program which executes the other stuff BETWEEN WORDS when a PAUSE occurs. Still longer pauses between sentences can be used to do FLOATING POINT calculations which may require more time.

Careful PROGRAM ORGANIZATION provides smooth results, with the apparent execution of 2 simultaneous tasks.

True multitasking can be achieved by rewriting the video routine at 281h which is executed 60 times per sec, and calling this routine by loading the IX register with the starting address of the new video routine. Considerable fine tuning is required to synchronize with the video timing but the results are worthwhile for this application which could include BUILDIN COMMANDS for VERBAL SCREEN COPY, LSPEAK, etc.

This is the same technique used for SOFTWARE HIRES GRAPHICS.

\*\*\* This article will be \*\*\*  
\*\*\* concluded next issue. \*\*\*

Wilf says that anyone can reprint this article if they wish as long as he is given credit.

Reprinted from:  
ZX-Appeal, the newsletter of the  
Vancouver Sinclair Users Group  
2006 Highview Place  
Port Moody, BC V3H 1N5  
CANADA  
\$15.00 CDN/yr

## LISTING 2

```

1 REM
2 DIM A$(256)
10 LET Q=128
99 REM ASSEMBLE PHONEMES IN B$
100 LET B$=""
110 PRINT "INPUT PHONEMES 0 TO
63", "0" TERMINATES ENTRY"
120 INPUT A
130 LET B$=B$+CHR$ A
140 PRINT A; " "
150 IF A<>0 THEN GOTO 120
199 REM TEXTINPUT/B$ TO BUFFER
200 PRINT AT 19,0;"ENTER TEXT W
ORD(S)"
210 INPUT T$
215 PRINT T$
217 LET A$(1 TO )=B$
220 RAND 1
230 RAND USR 16516
235 PRINT AT 19,0;"PRESS N/L TO
CONTINUE"
240 PAUSE 10000
250 CLS
260 GOTO 100

```

## Gift Giving Time!!

The Holidays are approaching exponentially.

SUGGESTION:

For something unparalleled---

GIVE A ONE-YEAR C.A.T.S. MEMBERSHIP

Nothing to wrap.  
Easy to mail.  
One size fits all.  
Easy to recognize the world over.

### 1987 Memberships

\$18  
(Tax deductible if paid by 12/31.)

In person: See your CATS treasurer,  
Ruth Fegley,  
at a monthly meeting.

By mail: CATS  
P.O. Box 725  
Bladensburg, MD 20710



## SIMPLE TEXT-TO-SPEECH IN SOFTWARE???

— By Ken Abramson

Last spring, you might recall that Harvey Taylor demonstrated a Text-to-Speech chip, the CT3256-AL2 working in conjunction with the good old SP0256 Speech Synthesizer chip and his OL. The ease with which he could punch-in English spellings and have them spoken by the voice box amazed everyone, including yours truly. Up to the time of Harvey's demonstration, I was relatively satisfied that my students could, in a reasonable amount of time, synthesize acceptable speech by using the simplified allophone chart they were given. Harvey's Text-to-Speech demo made the old allophone chart look archaic!!

This is what the situation boiled down to: do I abandon the unwritten ZX81 User Code of Ethics which implicitly prohibits users from spending large sums of money (over ten bucks), in order to purchase a chip that costs more than a ZX81? Sadly, I put my wallet back into my pocket, and resigned myself to the fate of all loyal ZX81 users: "If I wait a couple of years, I'll get it for \$5 or else something better will come along."

This rationalization stuck in my craw for most of the summer, until a sudden flash of inspiration arced across my depressed synapses! Why not try text-to-speech in software? My pulse quickened as one trembling hand reached for the old allophone chart and the other hand plugged in the ZX81 power pack. Somehow I would translate the essential allophone values into phonetic letter equivalents.

To my utter amazement, the implementation of a workable phonetic spelling system was actually very trivial! All one had to do was to define 52 simple variables that were spelled like phonetic sounds, using the numeric value for that particular allophone sound. For example, the sound for long "E" could be spelled as "EE", "IE", or "EA" in the most common English spellings. The allophone value for the long "E" sound is 19. Why not define three variables and set them equal to 19 (LET EE=19, LET IE=19, and LET EA=19)? When this is done, it does not matter whether you enter 19 when you are synthesizing speech, or whether you enter EE, or IE, or EA. All of these symbols now look like 19 to the computer and are processed as long "E" by the speech processor.

If you have written your own ZSPEAK programs, or if you are playing with Karl Brown's original programs, or the 2K version shown in the July/August '86 newsletter, you can easily modify your

program to accept phonetic spelling input just by defining these 52 variables near the beginning of your program. Of course, the phonetic symbols are up to you, but the closer you keep them to English spellings, the closer you will simulate text-to-speech. I say "simulate" because true text-to-speech involves the use of about 500 spelling and pronunciation rules and these don't cover all of the exceptions or irregularities of the tortuous English language.

Here is a simple list of phonetic variables with their defined allophone values. Just add these to your favorite ZSPEAK program and from now on you can enter either phonetic spellings or allophone numbers — whichever method you prefer to use at the moment.

### PHONETIC VARIABLES

|               |               |
|---------------|---------------|
| 1 LET A=26    | 27 LET Y=25   |
| 2 LET AY=20   | 28 LET B=28   |
| 3 LET AI=20   | 29 LET C=41   |
| 4 LET AIR=47  | 30 LET CH=50  |
| 5 LET AR=59   | 31 LET D=33   |
| 6 LET AU=23   | 32 LET F=40   |
| 7 LET AU=24   | 33 LET G=34   |
| 8 LET E=7     | 34 LET H=27   |
| 9 LET EA=19   | 35 LET J=10   |
| 10 LET EE=19  | 36 LET K=41   |
| 11 LET EAR=60 | 37 LET L=45   |
| 12 LET EI=20  | 38 LET M=16   |
| 13 LET ER=52  | 39 LET N=11   |
| 14 LET I=6    | 40 LET NG=44  |
| 15 LET II=12  | 41 LET P=9    |
| 16 LET IE=19  | 42 LET R=61   |
| 17 LET O=53   | 43 LET S=55   |
| 18 LET OO=30  | 44 LET SH=37  |
| 19 LET OOO=31 | 45 LET T=13   |
| 20 LET OR=56  | 46 LET TH=18  |
| 21 LET OU=32  | 47 LET TTH=29 |
| 22 LET OV=32  | 48 LET U=35   |
| 23 LET OY=5   | 49 LET V=46   |
| 24 LET OI=5   | 50 LET WH=48  |
| 25 LET OA=53  | 51 LET Z=43   |
| 26 LET U=15   | 52 LET ZSH=38 |

You will, no doubt, notice that there are three phonetic symbols in the variables list that do not appear in English spelling. These were invented to circumvent the difficulty of two identical visual symbols having completely different sounds when they are used in different words. For example, the "OO" sound in "LOOK" and in "LOOSE", or the "TH" sound in "THOSE" and in "THICK". The "TH" in "THOSE" or in "THE" has been assigned the "TH" spelling, and the hard, less common "TH" as in "THICK" was assigned the "TTH" phonetic symbol. Similarly, the longer "OO" sound in "LOOSE" has been assigned the strange looking "OOO" spelling. Also, "I" is long "I", and "II" is the short "I" sound as in "HIT". If you don't like these symbols, feel free to invent your own.

There you have it. No look-up tables, no hardware modifications, just five minutes worth of programming! To coin another ZX81 expression: "SIMPLICITY IS BEAUTIFUL...but it took all summer."

# COMPUTER INTELLIGENCE:

*artificial or counterfeit?*

JOURNAL OF IRREPRODUCIBLE RESULTS  
Dec. 1986

Mark Hochhauser  
Minneapolis, MN

During the past thirty years, computer researchers have been struggling to develop computers that can think—to possess what has been called “artificial intelligence”, or AI. Early computers played games which could be logically analyzed; however, human intelligence provides not just logical solutions to complex problems, but sometimes insightful, emotional and even irrational solutions.

What then is the likelihood that computers, whose language must operate on a system of symbolic logic, can be developed so as to be comparable to human intelligence? Before scientists and philosophers too quickly conclude that computers do in fact possess AI (or any other kind of I), several issues must be resolved.

## Definitions

Note that “artificial” means “made or contrived, feigned, pretended”, and “intelligence” means the “faculty for thought and reason”. Is AI only a form of “contrived thought” or perhaps “pretend reason”?

Artificial intelligence is a process by which computers are able to perform tasks which require thought when performed by humans. That definition seems accurate enough; if you solve a problem by using your thought processes, you are demonstrating intelligence. If a computer solves a similar problem by using its program, then the computer demonstrates AI—or does it?

Before we naively assume that computers are capable of AI, we must consider the distressing possibility that computers possess real intelligence (RI), and it is humans who possess artificial intelligence. Since computers can be programmed to function solely on logical principles, only the computer is capable of thinking logically, even though it may be programmed by an illogical human. The philosophical paradox created by such “logical negativism” must be resolved before the next generation reaches maturity.

## Intelligence and Humor

Can a computer create a problem—or a pun? Although a computer can perform billions of calculations per second, the real issue is the computer’s ability to create the mathematical problem in the first place. I suspect that the computer must be told by the programmer what problem it is to solve, rather than selecting one on its own.

Perhaps the most overlooked analogy to human intelligence is humor. A computer cannot in any sense be considered to have real intelligence until it can independently answer such questions as:

“Programmer, what’s this fly doing in my data disk”, or

“How many computers does it take to change a lightbulb?”

There is an absolute lack of humor regarding computers—except when you receive an outrageous bill from the telephone company, with the subsequent explanation that it was all due to “computer error”. Where was AI then? Either computer scientists have no sense of humor, or computers have no sense of humor. Either way, AI loses.

## Measuring Computer Intelligence

Human intelligence is measured on a continuum, from low to high. Thus, it is inappropriate to ask whether a computer has AI or not—the real question is *how much* AI does the computer possess? How is AI to be measured? Perhaps by IQ? Can an IQ test be developed, given all of the different computer languages now available? The translation problems would be nearly insurmountable. Clearly, standardized IQ tests for computers do not seem feasible at the present time.

The only way to assess a computer’s intelligence is to assume that the computer’s AI is correlated with its memory. That is, a computer with a memory of 512K can perform many more operations than can a compu-

ter with a memory of only 8K. Obviously, the 512K computer is "smarter" than the 8K computer. Extrapolating from research on human intelligence, the following categories suggest how computer intelligence can now be measured:

| Computer Memory | Intelligence Level | Human IQ Range |
|-----------------|--------------------|----------------|
| 512K            | Very Superior      | 130+           |
| 256K            | Superior           | 120-129        |
| 128K            | Bright-Normal      | 110-119        |
| 64K             | Average            | 90-109         |
| 32K             | Dull-Normal        | 80-89          |
| 16K             | Borderline         | 70-79          |
| 8K              | Retarded           | Below 69       |

Using this comparison, it is possible to develop an estimated "artificial-intelligence quotient", or A-IQ. The A-IQ procedure is simply to compare the computer memory with the human IQ range. Thus, a computer with 256K would have an A-IQ of about 125 ("superior"), while a computer with 64K memory would have an A-IQ of 100 ("average"). Future computer purchases could be based on the correspondence of the computer's A-IQ with the owner's IQ, thus producing a more equitable operator-machine match.

### Mental Breakdowns

Humans suffer from a variety of physiological and psychological problems which can affect their intellectual performance. Thus, we must ask whether computers can also suffer from ailments which will impair their AI. For example, when a computer is not

functioning properly, it is said to be "down"—an accurate description implying that the computer is suffering from an overload of its electrical nervous system, possibly a case of Down's Syndrome.

Human schizophrenia is characterized by emotional, intellectual and behavioral disorders, such as withdrawal from reality, delusions and hallucinations, memory deficits, etc. Computers are notoriously susceptible to external influences such as magnetism, electrical power surges and static electricity. These three forces seem to temporarily impair the functioning of the computer, much as electroconvulsive shock temporarily alters the functioning of a psychiatric patient.

Anyone who has worked with computers is well aware of how a temporary change in the computer's electrical nervous system can destroy an ongoing program. Such electrical overstimulation may produce: 1) a withdrawal from reality, in which the computer simply stops working on the program that it was originally working on, with the monitor turning blank; 2) hallucinations or delusions may be observed, with strange shapes/characters being displayed on the monitor, and 3) memory deterioration may occur in more severe cases, indicative of early stages of Alzheimer's disease.

With a better understanding of both computers and humans, it is becoming apparent that although computers may possess some desirable human attributes (such as AI), many computers are likely to acquire some undesirable human characteristics as well.



Capitol Area Times/Sinclair Users' Group  
P.O. Box 725  
Bladensburg, MD 20710

Name \_\_\_\_\_

Address \_\_\_\_\_

Phone Home \_\_\_\_\_ Office \_\_\_\_\_ ZIP \_\_\_\_\_

Memberships - \$15.00 (family/individual) make checks payable to C.A.T.S.

If family membership, please list family members participating:

Occupation \_\_\_\_\_

Has Radio call sign \_\_\_\_\_

Equipment

TX 80 \_\_\_\_\_ Ant. size \_\_\_\_\_

TX 80 \_\_\_\_\_ full keyboard \_\_\_\_\_

TX 81 \_\_\_\_\_ Printer \_\_\_\_\_

TX 1000 \_\_\_\_\_ type \_\_\_\_\_

TX 2000 \_\_\_\_\_ other interface \_\_\_\_\_

Special interest use for computers: ie, games, ham radio interface, business, other, etc. \_\_\_\_\_

Languages: Basic \_\_\_\_\_ Other \_\_\_\_\_

Machine \_\_\_\_\_

No. of years computer experience \_\_\_\_\_

What committees would you like to serve on? \_\_\_\_\_

Comments: *Where did you hear of C.A.T.S.?*

Do not write below:

St. Pd. \_\_\_\_\_ Ant. \_\_\_\_\_ Membership No. \_\_\_\_\_

Ca. \_\_\_\_\_ St. \_\_\_\_\_

**Club Information**

The Capitol Area Timex/Sinclair User's Group (CATS) is a non-profit special interest organization dedicated to serving the interests on those who own, use or are interested in learning more about the Timex/Sinclair family of personal computers.

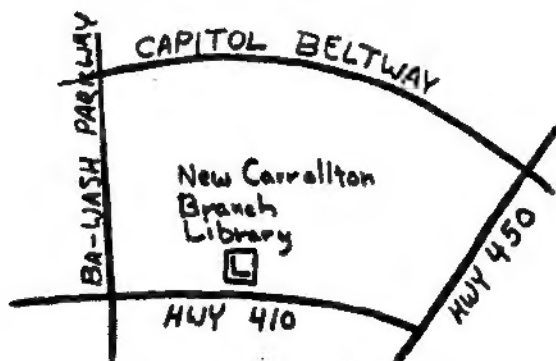
The official contact person for CATS is TOM BENT: (301) 730-7187

Monthly meetings are held from 12:00 to 5:00, at the second Saturday of each month in the large meeting room of the New Carrollton Branch Public Library.

**Network Information**

Timex SIG on CompuServe: Wednesday night, 10:00 PM Eastern time (Go Club)  
 QZX BBS: (505) 522-7081 FIDO net 15, node 6  
 -- " -- East coast: (703) 547-4815 FIDO net 18, node 9

CATS Newsletter  
 P.O. Box 725  
 Bladensburg MD 20710



**COME TO OUR MEETING!**

The next meeting of C.A.T.S. will be held on:

Saturday, December 13, 1986: 12:00 PM Hardware Meeting  
 2:00 PM General Meeting

At: New Carrollton Public Library  
 7414 Riverdale Road (Hwy 410), New Carrollton, MD

IF YOU ARE NOT A MEMBER OF CATS, THIS IS THE ONLY ISSUE YOU WILL RECIEVE

Dues = \$16.00 per year. per family.

# First Class